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EXAMINER	
KIM, CHONG R	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/816,232	FUJII, YUSAKU	
	Examiner	Art Unit	
	Charles Kim	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15-28,31,34,37,40,43,46 and 49* is/are allowed.

6)☒ Claim(s) *1-3,13,14,29,32,35,38,41,44,47,50 and 52* is/are rejected.

7)☒ Claim(s) *4-12,30,33,36,39,42,45,48,51 and 53* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/26/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group 1, claims 1-14, in the reply filed on July 20, 2004 is acknowledged. However, in view of a closer examination of the claims, the Examiner is withdrawing the restriction requirement. Accordingly, claims 1-53 will be considered for examination.

Claim Objections

The following quotation of 37 CFR § 1.75(a) is the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

3. Claims 1, 32-34, 38 are objected to under 37 CFR § 1.75 (a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Referring to claim 1, the phrases "outer circumference side one of the pattern curves" in lines 6-7 and "inner circumference side one of the pattern curves" in lines 8-9 are grammatically incorrect. It appears that the applicant intended the phrases to read "from an outer circumference side of the pattern curves", and "inner circumference side of the pattern curves", respectively. Appropriate corrections are required.

Referring to claim 32, the phrase "a alignment-result" in line 14 is grammatically incorrect. It appears that the applicant intended the phrase to read "an alignment-result". Similar objections are applicable to claims 33 and 34. Appropriate corrections are required.

Referring to claim 38, the phrase "the number of pattern curves" in line 7 lacks antecedent basis. It appears that the applicant intended the phrase to read "a number of pattern curves". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 13, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima, U.S. Patent No. 5,555,314 ("Nakajima").

Referring to claim 1 as best understood, Nakajima discloses a pattern-center determination apparatus for determining a pattern center of a fingerprint-like pattern, which is formed with a number of pattern curves, the apparatus comprising:

a. an auxiliary-line generation section for generating two or more auxiliary lines extending continuously from an outer circumference side of the pattern curves of the fingerprint-

like pattern toward an inner circumference side of the pattern curves so that each of the two or more auxiliary lines intersects each of the pattern curves perpendicularly or substantially perpendicularly (col. 2, line 64-col. 3, line 5 and figure 3); and

b. a pattern-center determination section for determining the pattern center based on one or more intersecting points of the two or more auxiliary lines generated by the auxiliary-line generation section (col. 3, lines 22-27).

Referring to claims 13 and 14, see the rejection of at least claim 1 above.

5. Claims 50, 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Bergenek et al., U.S. Patent No. 6,241,288 ("Bergenek").

Referring to claim 50, Bergenek discloses a pattern alignment apparatus for aligning two fingerprint-like patterns, each of which is formed with a number of pattern curves, while adjusting the alignment of the two fingerprint-like patterns, comprising:

a. an alignment section for aligning the two fingerprint-like patterns (col. 14, lines 6-53);

b. a minutia extraction section for extracting a group of minutiae from each of the fingerprint-like patterns (col. 14, lines 6-53);

c. a collation section for collating the two group of minutiae extracted from the two fingerprint-like patterns by the minutia extraction section based on the alignment by the alignment section (col. 14, lines 6-53);

d. an adjustment-shift calculation section for calculating an adjustment shift by which at least one of the two fingerprint-like patterns is to be shifted for adjusting the alignment

of the two fingerprint-like patterns, based on a result of the collation by the collation section so that the alignment of the two fingerprint-like patterns is improved (col. 14, lines 6-53); and

e. an alignment-result adjustment section for shifting at least one of the two fingerprint-like patterns by the adjustment shift calculated by the adjustment-shift calculation section so as to adjust a result of the alignment by the alignment section (col. 14, lines 6-53).

Referring to claim 52, Bergenek further discloses that the adjustment shift is at least one of a rotational angle (2-5 degrees) by which one of the two fingerprint-like patterns is to be rotated around a predetermined point with respect to the other of the two fingerprint-like patterns and a shift by which one of the two fingerprint-like patterns is to be parallelly shifted with respect to the other of the two fingerprint-like patterns (col. 14, lines 7-53).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Nakajima, U.S. Patent No. 5,555,314 ("Nakajima") and Hara, U.S. Patent No. 6,282,302 ("Hara").

Referring to claim 2, Nakajima does not explicitly disclose that the pattern-center determination section is operable to determine an intersecting point of the two auxiliary lines

generated by the auxiliary-line generation section as the pattern center. However, this feature was exceedingly well known in the art. For example, Hara discloses an auxiliary-line generation section that is operable to generate two auxiliary lines, and a pattern-center determination section that is operable to determine an intersecting point of the two auxiliary lines generated by the auxiliary-line generation section as a fingerprint-like pattern center (col. 3, lines 44-52 and figures 10-11).

Nakajima and Hara are combinable because they are both concerned with determining the center of a fingerprint-like pattern based on image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the auxiliary-line generation and pattern-center determination sections of Nakajima in view of Hara's teachings. The suggestion/motivation for doing so would have been to improve the accuracy of the fingerprint imaging system (Hara, col. 2, lines 40-49). Therefore, it would have been obvious to combine Nakajima with Hara to obtain the invention as specified in claim 2.

Referring to claim 3, the claim's use of "or" between two limitations only requires the prior art to meet either one of the limitations. In this case, Hara further discloses that the pattern-center determination section includes an auxiliary-line-intersecting-point calculation section for calculating one intersecting point of the two auxiliary lines generated by the auxiliary-line generation section, and a most-crowded-point calculation section for calculating a most crowded point, at which the intersecting point calculated by the auxiliary-line-intersecting-point calculation section is most crowded, so as to determine the calculated most crowded point as the pattern center (col. 3, lines 44-52 and figures 10-11. Note that the one intersecting point is considered the most crowded point).

7. Claims 29, 32, 35, 38, 41, 44, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bergenek et al., U.S. Patent No. 6,241,288 ("Bergenek") and Nakajima, U.S. Patent No. 5,555,314 ("Nakajima").

Referring to claim 29, Bergenek discloses a pattern alignment apparatus for aligning two fingerprint-like patterns, each of which is formed with a number of pattern curves, the apparatus comprising:

a. an alignment-reference determination section for determining one or more alignment references (center region) for each of the fingerprint-like patterns (col. 14, lines 7-10);

b. an alignment section for aligning the two fingerprint-like patterns so that the alignment references of the two fingerprint-like patterns determined by the alignment-reference determination section coincide with each other; the alignment-reference determination section including a pattern-center determination section for determining a pattern center of each of the fingerprint-like patterns as one of the alignment references (col. 14, lines 7-53).

Bergenek does not explicitly disclose that the pattern-center determination section includes an auxiliary-line generation section for generating two or more auxiliary lines extending continuously from an outer circumference side of the pattern curves of the fingerprint-like pattern toward an inner circumference side of the pattern curves so that each of the two or more auxiliary lines intersects each of the pattern curves perpendicularly or substantially perpendicularly and a pattern-center determination section for determining the pattern center based on one or more intersecting points of the two or more auxiliary lines generated by the auxiliary-line generation section. However, these features were exceedingly well known in the

art. For example, Nakajima discloses a fingerprint pattern-center determination section including:

i. an auxiliary-line generation section for generating two or more auxiliary lines extending continuously from an outer circumference side of the pattern curves of the fingerprint-like pattern toward an inner circumference side of the pattern curves so that each of the two or more auxiliary lines intersects each of the pattern curves perpendicularly or substantially perpendicularly (col. 2, line 64-col. 3, line 5 and figure 3); and

ii. a pattern-center determination section for determining the pattern center based on one or more intersecting points of the two or more auxiliary lines generated by the auxiliary-line generation section (col. 3, lines 22-27).

Bergenek and Nakajima are combinable because they are both concerned with determining the center of a fingerprint-like pattern based on image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the pattern-center determination section of Bergenek in view of Nakajima's teachings. The suggestion/motivation for doing so would have been to enhance the accuracy of the fingerprint imaging system by reducing false end points, and providing the capability of extracting a reference point easily (Nakajima, col. 1, lines 40-56). Therefore, it would have been obvious to combine Bergenek with Nakajima to obtain the invention as specified in claim 29.

Referring to claim 32, Bergenek further discloses:

c. a minutia extraction section for extracting a group of minutiae from each of the two fingerprint-like patterns (col. 14, lines 7-53), and

d. a collation section for collating the two group of minutiae extracted from the two fingerprint-like patterns by the minutia extraction section based on the alignment by the alignment section (col. 14, lines 7-53)

e. an adjustment shift calculation section for calculating an adjustment shift of at least one of two fingerprint-like patterns based on a result of a collation by a collation section so that an alignment of the two fingerprint-like patterns is improved (col. 14, lines 7-53); and

f. an alignment-result adjustment section for shifting at least one of the two fingerprint-like patterns by the adjustment shift calculated by the adjustment-shift calculation section so as to adjust a result of the alignment by an alignment section (col. 14, lines 7-53).

Referring to claim 35, Bergenek further discloses that the adjustment shift is at least one of a rotation angle by which one of the two fingerprint-like patterns is to be rotated around a predetermined point with respect to the other of the two fingerprint-like patterns and a shift by which one of the two fingerprint-like patterns is to be parallelly shifted with respect to the other of the two fingerprint-like patterns (col. 14, lines 7-53).

Referring to claim 38 as best understood, Bergenek discloses a pattern verification apparatus for verifying a group of object minutiae for verification extracted from an object fingerprint-like pattern for verification with a group of registered minutiae extracted in advance from a registered fingerprint-like pattern, each of the object fingerprint-like pattern and the registered fingerprint- like pattern being formed with a number of pattern curves, the apparatus comprising:

a. a pattern inputting section for inputting the object fingerprint-like pattern (col. 14, lines 7-53);

b. an alignment-reference determination section for determining one or more alignment references (center region) of the object fingerprint-like pattern inputted by the pattern inputting section (col. 14, lines 7-53);

c. a minutia extraction section for extracting the group of object minutiae from the object fingerprint-like pattern inputted by the pattern inputting section (col. 14, lines 7-53);

d. a registration-data obtaining section for obtaining registration data regarding the registered fingerprint-like pattern, the registration data including the group of registered minutiae and one or more alignment references (center region) of the registered fingerprint-like pattern (col. 14, lines 7-53);

e. an alignment section for aligning the object fingerprint-like pattern or the group of object minutiae and the group of registered minutiae so that the alignment references of the object fingerprint-like pattern determined by the alignment-reference determination section and the alignment references of the registered fingerprint-like pattern obtained by the registration-data obtaining section coincide with each other (col. 14, lines 7-53);

f. a verification section for verifying the group of object minutiae with the group of registered minutiae based on the alignment by the alignment section (col. 14, lines 7-53);

the alignment-reference determination section including a pattern-center determination section for determining a pattern center of the object fingerprint-like pattern as one of the alignment references of the object fingerprint-like pattern, the alignment references of the registered fingerprint-like pattern including a pattern center of the registered fingerprint-like pattern (col. 14, lines 7-53).

Bergenek does not explicitly disclose that the pattern-center determination section includes an auxiliary-line generation section for generating two or more auxiliary lines extending continuously from an outer circumference side of the pattern curves of the fingerprint-like pattern toward an inner circumference side of the pattern curves so that each of the two or more auxiliary lines intersects each of the pattern curves perpendicularly or substantially perpendicularly and a pattern-center determination section for determining the pattern center based on one or more intersecting points of the two or more auxiliary lines generated by the auxiliary-line generation section. However, these features were exceedingly well known in the art. For example, Nakajima discloses a fingerprint pattern-center determination section including:

i. an auxiliary-line generation section for generating two or more auxiliary lines extending continuously from an outer circumference side of the pattern curves of the fingerprint-like pattern toward an inner circumference side of the pattern curves so that each of the two or more auxiliary lines intersects each of the pattern curves perpendicularly or substantially perpendicularly (col. 2, line 64-col. 3, line 5 and figure 3); and

ii. a pattern-center determination section for determining the pattern center based on one or more intersecting points of the two or more auxiliary lines generated by the auxiliary-line generation section (col. 3, lines 22-27).

Bergenek and Nakajima are combinable because they are both concerned with determining the center of a fingerprint-like pattern based on image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the pattern-center determination section of Bergenek in view of Nakajima's teachings. The

suggestion/motivation for doing so would have been to enhance the accuracy of the fingerprint imaging system by reducing false end points, and providing the capability of extracting a reference point easily (Nakajima, col. 1, lines 40-56). Therefore, it would have been obvious to combine Bergenek with Nakajima to obtain the invention as specified in claim 38.

Referring to claim 41, Bergenek further discloses that the pattern inputting section is operable to input the registered fingerprint-like pattern, the alignment-reference determination section is operable to determine the alignment references of the registered fingerprint-like pattern inputted by the pattern inputting section, the minutia extraction section is operable to extract the group of registered minutiae from the registered fingerprint-like pattern inputted by the pattern inputting section, and the registration-data obtaining section is operable to obtain both the alignment references of the registered fingerprint-like pattern determined by the alignment-reference determination section and the group of registered minutiae extracted by the minutia extraction section as the registration data regarding the registered fingerprint-like pattern (col. 14, lines 7-53).

Referring to claim 44, Bergenek further discloses an adjustment-shift calculation section for calculating an adjustment shift of a group of object minutiae or/and a group of registered minutiae based on a result of a verification by a verification section so that the alignment of the group of object minutiae and the group of registered minutiae is improved; and an alignment-result adjustment section for shifting the group of object minutiae or/and the group of registered minutiae by the adjustment shift calculated by the adjustment-shift calculation section so as to adjusting a result of the alignment by the alignment section; a verification section being operable to output a result of the verification between the group of object minutiae and the group of

registered minutiae based on the adjustment of the alignment result by the alignment-result adjustment section (col. 14, lines 7-53).

Referring to claim 47, Bergenek further discloses that the adjustment shift is at least one of a rotation angle by which at least one of the group of object minutiae and the group of registered minutiae are to be rotated around a predetermined point with respect to the other of the two groups of minutiae and a shift by which at least one of the group of object minutiae and the group of registered minutiae are to be parallelly shifted with respect to the other of the two groups of minutiae (col. 14, lines 7-53).

Allowable Subject Matter

8. Claims 15-28, 31, 34, 37, 40, 43, 46, 49 are allowed.

9. Claims 4-12, 30, 33, 36, 39, 42, 45, 48, 51, 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Hsu et al. U.S. Patent No. 5,140,642 discloses a method for determining the core/center point of a fingerprint image.

b. Hara U.S. Patent No. 5,040,224 discloses a method for detecting a core/center point on a fingerprint image based on the ridge orientation of a fingerprint image.

c. Shibuya U.S. Patent No. 5,337,369 discloses a method for detecting a core/center region in a fingerprint image and classifying the fingerprint based on the shape and direction of the ridge lines near the detected core region.

d. Hara et al. U.S. Patent No. 5,848,176 discloses a method for determining an orientation of a fingerprint image based on a circle around a center region (figure 2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 703-306-4038. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
December 16, 2004

Jon Chang
Primary Examiner